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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,904	07/24/2003	Ritsuko Kawasaki	0756-7181	1203
31780	7590	09/09/2004	EXAMINER	
ERIC ROBINSON PMB 955 21010 SOUTHBANK ST. POTOMAC FALLS, VA 20165			SEFER, AHMED N	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No. **10/625,904**

Applicant(s)

KAWASAKI ET AL.

Examiner

A. Sefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 09/640,077.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/2003 and 8/13.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen (“Chen”) USPN 5,965,916.

Chen discloses in figs. 3 and 6 a semiconductor device comprising: a translucent substrate 1 and a thin film transistor over the substrate (as in claim 2); a base film 3 having a region of a first thickness (centered in the middle) and a region of a second thickness (overlapping layer 2) smaller than the first thickness, the film being formed over one surface of the translucent substrate, and the region of the first thickness having an area smaller than the region of the second thickness; and an island-like semiconductor layer 32 having a crystal structure over the base film, the layer being formed over the region of the first thickness and the region of the second thickness or at least a part of a channel formation region 12/33 of the thin film transistor being provided over the region of the first thickness (as in claim 2).

As for claims 3 and 4, the specification contains no disclosure of either the critical nature of the claimed arrangement or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim,

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the applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

3. Claim 2 is rejected under 35 U.S.C. 102(b) as being anticipated by Suzawa et al. (“Suzawa”) USPN 5,728,259.

Suzawa discloses in fig. 5D-5E a semiconductor device comprising: a translucent substrate 501 and a thin film transistor over the translucent substrate; a base film 502 having a region of a first thickness (under active layer) and a region of a second thickness (not under active layer) smaller than the first thickness, the film being formed over one surface of the translucent substrate, and the region of the first thickness having an area smaller than the region of the second thickness; and at least a part of a channel formation region 511 of the thin film transistor being provided over the region of the first thickness.

4. Claims 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Batey et al. (“Batey”) USPN 4,998,152.

Batey discloses in 3D a semiconductor device comprising a translucent substrate 40 over which a thin film transistor is provided (as in claim 6); a heat conduction layer 42 formed like an island over one surface of the translucent substrate; a base film 44 over the translucent substrate, the base film being formed to cover the heat conduction layer; an island-like semiconductor layer 54'/56' having a crystal structure over the base film, at least a part of the island-like semiconductor layer being formed over the heat conduction layer or at least a part of the channel formation region of the thin film transistor being provided over the heat conduction layer (as in claim 6).

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5. Claims 5-10 are rejected under 35 U.S.C. 102~~(b)~~<sup>(e)</sup> as being anticipated by Yamazaki et al. (“Yamazaki”) US PG-Pub 2003/0092213.

Yamazaki discloses in fig. 8C a semiconductor device comprising a translucent substrate 136 over which a thin film transistor is provided (as in claim 6); a heat conduction layer 137 containing at least aluminum nitride/aluminum oxide/aluminum nitride oxide (as in claims 7 and 8) or a compound containing Si, N, O and at on selected from the group consisting Al and rare earth elements (as in claims 9 and 10) formed like an island over one surface of the translucent substrate; a base film 138 over the translucent substrate, the base film being formed to cover the heat conduction layer; an island-like semiconductor layer 153/154 having a crystal structure over the base film, at least a part of the island-like semiconductor layer being formed over the heat conduction layer or at least a part of the channel formation region of the thin film transistor being provided over the heat conduction layer (as in claim 6).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Batey in view of Takahashi et al. (“Takahashi”) USPN 6,191,476.

Batey discloses the device structure as recited in the claim, but does not disclose a conduction layer containing aluminum nitride.

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Takahashi discloses in fig. 41 a semiconductor device comprising a translucent substrate 4201 and a heat conduction layer 4202 containing aluminum nitride.

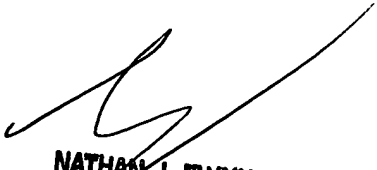
Therefore, it would have been obvious to one skilled in the art at time the invention was to incorporate Takahashi's teachings with Batey's device since that would minimize the generation of heat as taught by Takahashi.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANS  
September 3, 2004



**NATHAN J. FLYNN**  
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